

***This document is a translation of the original document, written in Spanish for Comisión Estatal de Servicios Públicos de Tijuana (CESPT), the water and wastewater operating agency for the municipalities of Tijuana and Playas de Rosarito, Baja California, Mexico.***

# Contents

## Appendices Only

<i>Appendix A</i>	Documents Report
<i>Appendix B</i>	Methodology of Economic Factors and Activity
<i>Appendix C</i>	Description of the Potable Water System Districts
<i>Appendix D</i>	List of Standpipes in Operation
<i>Appendix E</i>	Structures connected to the Telemetry System
<i>Appendix F</i>	List of Regulation Tanks
<i>Appendix G</i>	List of Pumping Stations
<i>Appendix H</i>	Main Problems Observed with the Potable Water System
<i>Appendix I</i>	Potable Water System
<i>Appendix J</i>	Wastewater System
<i>Appendix K</i>	Sustainable Development Criteria
<i>Appendix L</i>	Methodology used for the Population Projections
<i>Appendix M</i>	Population and Land Use Projections Tables and Figures
<i>Appendix N</i>	Economic Growth Forecast
<i>Appendix O</i>	Demand Model
<i>Appendix P</i>	Master Plan Assumptions Concerning the Public Law 106-457
<i>Appendix Q</i>	Pipelines with Insufficient Capacity in Maximum Flow Conditions (2001)
<i>Appendix R</i>	Methodology Used to Estimate Costs (English Translation Forthcoming)
<i>Appendix S</i>	Methodology Used in the Preliminary Estimation of the Potential Environmental Impact (English Translation Forthcoming)

# APPENDIX K

## Sustainable Development Criteria

## Aggregated Indicators for Alternatives Evaluation

#	Key Indicator	Indicators Provided by BTC		Environment & Ecosystem Sustainability	Human Health Sustainability	Technical Sustainability	Financial Sustainability	Socio-economic Sustainability	Community Participation	Risk
		NS	PW							
		NS	= New Water Source							
		PW	= Potable Water							
		WC	= Wastewater Collection							
		TR	= Wastewater Treatment & Reuse							
1	Present value cost of alternative									
		NS	Actual water rates				X	X	X	
		NS	Cost-benefit analysis				X			
		NS	Phased financing scheme				X			
		NS	Private sector participation				X			
2	Cost of operations and maintenance									
		NS	Cost of operation and maintenance for new water sources			X				
		TR	Cost of sludge disposal and reuse per cubic meter			X	X			
		TR	Cost per cubic meter of water				X	X		
		PW	Production cost per cubic meter					X		
		PW	Operating cost optimization			X	X			
3	Annual energy use (Kwh)									
		NS	Efficient energy use	X						
		NS	Use of new technology			X				
		NS	Energy generation within the system			X				
		NS	Natural gas usage			X		X		
		TR	Efficiency (%) of the treatment plants			X	X			X
		NW	Use of alternative energy systems	X						
4	Level of implementation risk									
		NS	Political situation							X
		NS	Financial and economic crises							X
		NS	Linkage between new sources and growth			X		X		
		NS	Emergency storage			X				
		NW	Use of alternative energy systems	X						
		NS	Implementation period for new water sources			X	X	X		
		NS	Use of new technology			X				
		PW	Land use control (variability in land use and development)							X
		PW	Contingency plan							X
		WC	New sanitary sewer hook ups	X	X	X	X	X	X	X
5	Reduce environmental impacts									
		NS	Reduced environmental impact			X	X	X		

## Aggregated Indicators for Alternatives Evaluation

#	Key Indicator	Indicators Provided by BTC	Environment & Ecosystem Sustainability	Human Health Sustainability	Technical Sustainability	Financial Sustainability	Socio-economic Sustainability	Community Participation	Risk
		NS = New Water Source PW = Potable Water WC = Wastewater Collection TR = Wastewater Treatment & Reuse							
6	Adequate Infrastructure Improvements in Time								
		NS Water quantity		X					
		PW Capacity for potable water treatment		X			X		
		PW Replacement of distribution lines (%)				X			
		WC New sanitary sewer hook ups	X	X	X	X	X	X	X
		TR Percentage of sewage treated	X	X	X				
		TR Kilometers of water reuse pipeline			X		X		
7	Percentage of hydraulic capacity needed that is in place								X
		NS Water supply conveyance infrastructure			X				
		PW Replacement of distribution lines (%)				X			
		WC Hydraulic capacity of sewer lines	X	X	X	X	X	X	X
		WC Sewer replacement and rehabilitation programs			X	X			
		WC Storm water impact on the sewage collection system	X	X	X				
		WC Construction of a storm water collection system	X	X	X	X	X	X	X
		WC Infiltration/inflow volume into the sanitary sewers			X				
		WC Strategic planning of sanitary system infrastructure (phasing)			X	X		X	X
		WC Control of discharges from runoff							X
8	Number of sources of water and their respective contributions								
		PW Water supply alternatives							X
		NS Diversified sources of water							X
		NS Seismic risk							X
		NS Terrorism and sabotage							X
9	Percentage of water conserved and reduction in water losses								
		PW Response time for reporting water leaks				X			
		PW Percentage of water lost (a. actual; b. commercial)				X			
		PW Percentage of water meters				X			
		PW Water meter accuracy				X			
		NS Optimize resources through demand reduction							X
		NS Water conservation						X	
		PW Per person water consumption						X	
		TR Volume of industrial wastewater reused	X		X				
10	The ratio of ground water extraction to artificial groundwater recharge								

## Aggregated Indicators for Alternatives Evaluation

#	Key Indicator	Indicators Provided by BTC	Environment & Ecosystem Sustainability	Human Health Sustainability	Technical Sustainability	Financial Sustainability	Socio-economic Sustainability	Community Participation	Risk
		NS = New Water Source PW = Potable Water WC = Wastewater Collection TR = Wastewater Treatment & Reuse							
		NS Aquifer withdrawal and recharge	X						
		PW Ground water extraction (sustainable)	X						
		TR Infiltration volume into the aquifer	X	X					
		TR Volume of water recharging the aquifer						X	X
		NS ART reuse alternatives		X	X				
11	Percentage of potable water that meets quality standards throughout the distribution network								
		PW Capacity for potable water treatment		X			X		
		NS Compliance with quality standard (N127)		X					
		PW Homogeneity of water quality delivered		X					
		PW Water quality		X					
		PW Chlorine residual		X					
		PW Total coliform		X					
		PW Total dissolved solids		X					
12	Percentage of population in service area that has water service								
		PW Percentage of population supplied		X					
		PW Percentage of service area that has water supply		X					
13	Average hours/day that water service is provided								
		PW Service continuity		X					
		PW Hours/day water service provided		X					
		PW Complaints (lack of water service)		X					
		PW Storage volume				X			
		PW Pressure zones (coverage)				X			
		PW Regulation volume (%)				X			
14	Percentage of population with sanitary service								X
	WC	Percentage of population with sanitary service							X
15	Percentage of municipal wastewater generated that is discharged in compliance with standards								
		WC Number of sewage spills per month	X	X					
		TR Number of sewage spills	X	X					
		TR Volume spilled	X	X					
		TR Percentage of sewage treated	X	X	X				
		TR Sewage treatment capacity	X		X	X			

## Aggregated Indicators for Alternatives Evaluation

#	Key Indicator	Indicators Provided by BTC	Environment & Ecosystem Sustainability	Human Health Sustainability	Technical Sustainability	Financial Sustainability	Socio-economic Sustainability	Community Participation	Risk
		NS = New Water Source PW = Potable Water WC = Wastewater Collection TR = Wastewater Treatment & Reuse							
		TR Efficiency (%) of the treatment plants			X	X			X
		TR Days/year of violations of effluent discharge requirements			X			X	
		TR Treated effluent volume	X	X					
		PW Number of private plants			X				
		TR Sewage volume treated in private plants inside and outside the sewage collection system			X				
		TR Treated effluent quality	X	X	X				
		TR Number of complaints due to odors					X	X	
		TR Volume of tertiary effluent	X		X				
16	Volume of wastewater discharged to transboundary waters (Tijuana and Alamar rivers, river canyons, and the Pacific Ocean)								
	TR	Volume spilled	X	X					
17	Efficient sludge management								
		PW Environmental impacts of water treatment sludge	X						
		TR Sludge handling	X						
		TR Sludge quality	X		X	X			
		TR Sludge volume generated and reused			X	X			
18	Percentage of effluent volume reused								
		NS Reuse infrastructure			X				
		PW Wastewater recovery	X						
		PW Environmental impacts of water reuse	X						
		TR Percentage of effluent volume reused			X	X			
		TR Kilometers of water reuse pipeline			X		X		

X Indicator

X Key indicator